

## **A recent dioxin pollution case in Iceland**

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### **Background**

Contamination with dioxins and dioxinlike PCBs was detected in milk, beef and lamb meat in North West Iceland late in the year 2010. The contamination was localized to a narrow valley, Skutulsfjörður, situated at the bottom of a fjord surrounded by high mountains. A municipal waste incinerator for the local community was situated in the valley to which the contamination was traced. Calm weather prevails in the valley. Annual production in the valley was around 6 tons of meat and approximately 8 tons of milk. Surveillance projects carried out elsewhere in Iceland, for dioxins and dioxinlike PCBs in meat and milk in Iceland in 2003 / 2004 revealed very low levels of dioxins, e.g. 0,11 – 0.20 pg TEQ/g for dioxins and 0,36 – 0.73 pg TEQ/g for the sum of dioxins and dioxinlike PCBs in dairy fat (n=10), and the annual nationwide monitoring program by the Icelandic Food and Veterinary Authority has always shown very low levels of dioxinlike PCBs in agricultural products.

### **Results**

#### **Milk**

The contamination was discovered in December 2010 when analysis of a milk sample taken at the only milk farm in this valley in Skutulsfjörður showed values above maximum limits for dioxins and dioxinlike PCBs (3,98 pg TEQ/g fat for dioxins and 7,42 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs). The maximum limit is 3,0 pg TEQ/g fat for dioxins and 6,0 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs. An additional sample taken at the farm confirmed the analytical results for the first milk sample and showed levels of dioxins and dioxinlike PCBs above the maximum limit (4,9 pg TEQ/g fat for dioxin and 10,2 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs). Milk samples taken at farms in surrounding fjords revealed normal low levels for Icelandic milk fat.

#### **Beef**

Two samples of beef taken at the farm in Skutulsfjordur showed increased levels of dioxins and dioxinlike PCBs and one of those was above the maximum limit (4,7 pg TEQ/g fat for dioxin and 12,3 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs). The maximum limit for meat is 3,0 pg TEQ/g fat for dioxins and 4,5 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs.

#### **Lamb and sheep meat**

Eleven samples of meat were taken in the area, mostly from the private meat supplies of the farmers. Two of the samples showed normal low values for Icelandic lamb meat (0,12 – 0,28 pg TEQ/g fat) and two had slightly elevated levels. Seven of the samples showed levels above the background, two of which exceeded the maximum limits, though not significantly (3,3 and 3,2 pg TEQ/g fat for dioxin and 5,3 and 4.3 pg TEQ/g fat for the sum of dioxins and dioxinlike PCBs).

#### **Hay**

One sample of hay showed 0.85 ng TEQ/ kg dioxins and 1.36 ng TEQ/kg hay for the sum of dioxins and dioxinlike PCBs while the normal level for hay in Iceland is typically about 0.1 ng TEQ/kg hay for dioxins and 0.2 ng TEQ/kg for the sum of dioxins and dioxinlike PCBs. The maximum limit for hay is 0.75 ng TEQ/kg for dioxins and 1,25 ng TEQ/kg for the sum of dioxins and dioxinlike PCBs.

### **Actions by MAST**

As soon as the contamination was discovered, milk delivery from Skutulsfjörður to the local dairy plant was stopped and delivery of animals to slaughter was prohibited. The incinerator plant was closed down in early 2011 by the relevant authority. Furthermore, all food products on the market that could possibly be contaminated, both in Iceland and in Europe, were withdrawn and disposed of. Subsequent surveillance of food products from farms in surrounding communities and in other communities in Iceland with similar incinerator plants, has only shown very low background levels, well below current action limits. An ad hoc working group of specialists was established by MAST to provide a scientific opinion on the utilization of the animal products in the area and the future possibilities for agricultural activities in the

area. As a result of the opinion, all animals used for food production from the farm in question were culled and safely disposed of. Similarly, all contaminated feed has been disposed of. An experiment is ongoing to examine the uptake of dioxins and dioxinlike PCBs by grazing sheep in Skutulsfjörður. The results of the experiment will be available in a few weeks.